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List of fish species of Fruteiras river (Itapemirim river basin), Espírito Santo, Southeastern Brazil

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ABSTRACT

The Itapemirim river basin is part of the basins of southern Espírito Santo and the great eastern coastal system and incorporates a large portion of the fish fauna of the coastal basin; 79 species are currently known in the basins of southern Espírito Santo, and there are species exclusively freshwater species and estuarine or marine species. However, there are few consolidated scientific data for Itapemirim river basin in particular. Thus, the present study aimed to collect and review the literature available on the fish fauna of the Itapemirim river basin, especially its tributary, the Fruteira river. Primary data on the species were collected at six sampling stations. Qualitative and quantitative data collection methodologies were used in each sampling area to survey the species. The data were compared with other studies on the basin. During the sampling period, 25 species were captured in areas of the Fruteiras Small Hydroelectric Power Plant; 11 of them are known to science, although they are not mentioned in the other research papers on the Itapemirim river basin. The records of other species for the Itapemirim river, considering ecologically relevant native species and introduced species, show the importance of the Fruteiras river as a migration route and a conservation site in the Itapemirim river basin. This reinforces the importance of maintaining conservation programs for this basin.

Keywords: Fishes, Espírito Santo, Hydroeletric, Ichthyofauna.

Lista das espécies de peixes do rio Fruteiras (bacia do rio Itapemirim), Espírito Santo, Sudeste do Brasil

RESUMO

A bacia do rio Itapemirim faz parte das bacias do Sul do Espírito Santo e do grande sistema costeiro do leste e incorpora uma grande parcela da ictiofauna da bacia costeira, atualmente são conhecidas 79 espécies para as bacias do Sul do Espírito Santo, destaca-se a presença de espécies exclusivamente de água doce e estuarinas ou marinhas. Porém ainda existem poucos dados científicos consolidados exclusivamente para a bacia do rio Itapemirim. Nesse sentido o presente trabalho teve por objetivo inventariar e realizar o levantamento bibliográfico da ictiofauna da bacia do rio Itapemirim, em especial o seu afluente, o rio Fruteiras. Para o levantamento das espécies, foram utilizados dados primários obtidos em seis estações amostrais, onde para cada área de amostragem adotou-se metodologias qualitativas e quantitativas de coletas. Os dados foram comparados com outros estudos da bacia. Durante o período de amostragem foram capturadas nas áreas da Pequena Central Hidrelétrica Fruteiras 25 espécies, dessas 11 são conhecidas para a ciência, entretanto não citadas nos demais artigos da bacia do rio Itapemirim. Os registros de outras espécies para rio Itapemirim, entre espécies nativas de importância ecológica e espécies introduzidas, demonstra a importância do rio Fruteiras como importante rota migratória e rio de conservação na bacia do rio Itapemirim, reforçando a importância da manutenção de programas de conservação para esta bacia.

Palavras-chave: Peixes, Espírito Santo, Hidrelétrica, Ictiofauna.

Introduction

Neotropical fish fauna is dominated by fish that have a relatively old association with freshwater habitats, and it is home to the largest number of species in the world (LOVEJOY et al., 2006; LÉVÊQUE et al., 2008). This wealth is associated with the geomorphological formation of river basins that offered a wide variety of environments and enabled diversification in a long and complex evolutionary history (LANGEANI et al., 2009).

The river systems of the Neotropical region and the coastal basins of eastern Brazil stand out because such region is considered as highly endemic because it has restricted-range species (BIZERRIL, 1994; NOGUEIRA et al., 2010). Among the eastern river basins, those in Espírito Santo harbor a significant portion of that diversity. The Museu de Zoologia Mello Leitão has records of about 89 species of freshwater fish distributed into 21 families and 6 orders. Although this is considerable wealth, there are few consolidated data on this diversity (LANGEANI et al., 2009; SARMENTO-SOARES; MARTINS-PINHEIRO, 2009).

In state of the Espírito Santo, it is extremely important to conduct more detailed studies on local fish fauna, because river basins are being increasingly depleted by human activities, which generate immediate and irreversible impacts on fish fauna. Deforestation, siltation, pollution, construction of dams and introduction of invasive and exotic species are examples of these impacts.

River basins of southern Espírito Santo have a considerable ichthyofauna, with approximately 79 species belonging to 31 families and 11 orders, where 17 are estuarine and marine. Among the basins of the southern Espírito Santo, the Itapemirim river basin stands as one of the most diverse. It has indigenous 56 species, and 12 of them are found solely in this basin (SARMENTO-SOARES; MARTINS-PINHEIRO, 2013). The Itapemirim river basin covers a significant portion of the state of Espírito Santo, and it is similar to other coastal sub-basins of the east. There are few consolidated studies on it, and it is under increasing environmental degradation.

In this context, the present study aimed to survey the fish

fauna of the Fruteiras river, a major tributary of the Itapemirim river in the areas of influence of Fruteiras Small Hydroelectric Power Plant in the municipality of Cachoeiro de Itapemirim, state of Espírito Santo. Another objective of this study is to review data on the fish fauna of the Itapemirim river basin.

Material and Methods

This paper made a literature review on the fish fauna of the Itapemirim river. The following bibliographical references were analyzed: Technical report of Monitoring ichthyofauna in the areas of influence of small hydroelectric central Francis Gross, River Itapemirim Alegre - ES produced by CTA Meio Ambiente in 2013. Although the paper was used "The fish fauna in the South Basin of Espírito Santo, Brazil" by Sarmento-Soares and Martins-Pinheiro in 2013.

The zoogeographical description of the Itapemirim river basin, which takes into account the divisions of lower, middle and upper course of the river, was based on papers by Sarmento-Soares and Martins-Pinheiro (2012; 2013).

Data were crossed with primary data from two field trips for data collection on the fish fauna of the area of influence of Fruteiras Small Hydroelectric Power Plant, which took place between the months of August 2002 and August 2004. To understand the composition of fish fauna, is important to use various collection methods in order to get results that reflect the reality of the environment studied and the conservation status of the area (UIEDA; CASTRO 1999, LATINI et al., 2004, MENDONÇA et al., 2005).

In this sense, specific collection methods for rivers and Neotropical streams were used for the primary survey. 10 gill nets were used for 12 hours in each region, and the networks were installed at standardized distances and at appropriate places seeking higher fish catch. This totaled 1,920 m^2/h by sampling location. The random method was also adopted by means of trawl nets, cast nets and sieves. Cast nets were used 10 times (2.4 mm and 4 mm), while the sieve (1 mm) and the trawl net (1.30 x 1.40 m, 2 mm) were used 30 times at each location.

Samples were collected at six points in the Fruteiras river, by small hydroelectric central Fruteiras (Itapemirim river and Fruteiras river - in the Middle Itapemirim river). Three of the points were sampled upstream of the Fruteiras Small Hydroelectric Power Plant and other three points were sampled downstream of it (Table 1 - Figure 1).

Table 1. Sampling locations, descriptions of the area and vegetation sampling regions. UTM Coordinates, zone 24k.

Locations	Utm coordinates	Structure of the banks	Description of Fruteiras river
P1 - Upstream of the reservoir	7710358; 284058	Banks with little amount of riparian vegetation, and the presence of surrounding farms	River with 6m wide bed without rock formations, and straight bed
P2 – Immediately upstream of the reservoir	7710120; 283219	Presence of riparian vegetation and pastures, with large slopes by the banks	9m wide riverbed, with rock formations and steep slope
P3 – Reservoir of the small hydroelectric central	7709479; 282339	Better structured riparian vegetation compared to other areas, banks with little pasture and some bamboo thickets	Rock formations and small waterfalls
P4 – Immediately downstream of the dam	7710553; 281491	Region with a prevalence of pastures	Region with sinuous and shallow bed, and no rock formations
P5 Downstream of Dam	7711388; 280901	Region with a prevalence of pastures and farms	Region with sinuous and shallow bed, and no rock formations
P6 – Downstream of Dam	7712415; 279692	Concentration of riparian vegetation	Region with sinuous and shallow bed, and a little rock formation

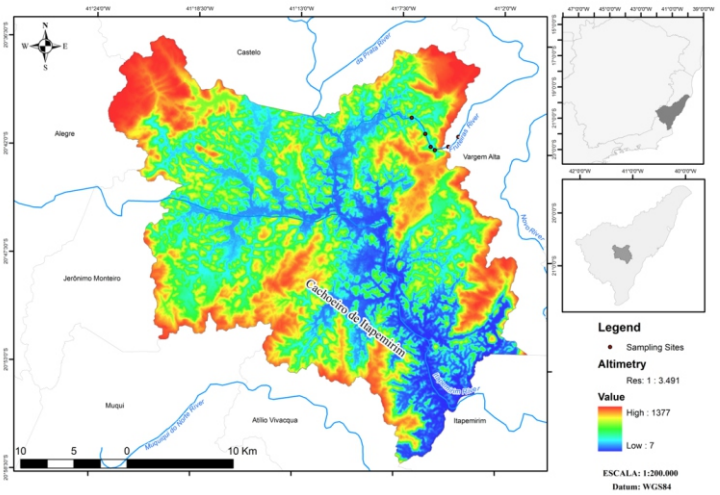

Figure 1 .Determination of data collection locations for the fish fauna of the Fruteiras river.

Studies on the Fruteiras river were authorized by IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) through document no. 134/99. The specimen were sent to the Museu de Zoologia Mello Leitão (voucher_1 to the 800) and BIOALEVINUS - Laboratório de Reprodução de Peixes Tropicais) situated in Ibiraçú - Espírito Santo State, Brazil (batch voucher: CTA / EDP 2004 - number 1 to 862).

Results and Discussion

Altogether, 10 orders, 37 families and 120 species were recorded, with distribution or potential distribution for the entire Itapemirim river basin, considering both primary and secondary data (Table 2). The upper stretch of the basin had 81 fish species, the middle section had 45 species and the lower had 62 fish species (CTA, 2013; SARMENTO-SOARES;

MARTINS-PINHEIRO, 2013). The inventory of fish in the Fruteiras river in the influence of small hydroelectric central Fruteiras, which is inserted into the middle portion of the Itapemirim river, recorded 25 fish species which account for approximately 20% of total species for the Itapemirim river basin. The fish fauna in the areas of Fruteiras Small Hydroelectric Power Plant had 11 species not yet described for other stretches of the Itapemirim river (Table 2). The results also showed positive correlations of approximately 24% with the middle section, with 14% upper portion and 12%with the lower stretch.

The lowest correlation with the fish fauna of the lower stretch of the Itapemirim river is due to the presence of diadromous and estuarine species not present in the areas of Fruteiras Small Hydroelectric Power Plant. The values are satisfactory, considering that the Fruterias river is a smaller tributary compared with the Itapemirim river. The stretch that had the highest wealth was the region of the Upper Itapemirim river. This diversity is associated with the complexity of headwater environments (MENEZES et al., 2007), reflecting high rates of endemism and the existence of many restricted-range species (BUCKUP, 1999; ALVES et al., 2008; LANGEANI et al., 2009). It may also be related to improved conservation of these habitats, the presence of protected areas and lesser influence of commercial fishing, as observed in the middle and lower stretches.

Table 2. Fish species sampled in the Itapemirim river basin, especially in the upper, medium and lower stretches, and in the Fruteiras Small Hydroelectric Power Plant region. Organized according to Reis et al., (2003). Information shown: common names, taxonomic classification, distribution and origin, and occurrence. Itapemirim river basin: U - Upper Itapemirim River; M- Middle Itapemirim River, L - Lower Itapemirim River; Reference: 1 - CTA, 2013. 2 - Sarmento-Soares and Martins-Pinheiro, 2013; 3 - Primary survey in the area of influence of small hydroelectric central Fruteiras.

Family	Species	Common names	Itapemirim River Basin	Fruteiras river (sampling station)	Reference	Origin/Occurrence
Anostomidae	*Hypomasticus mormyrops* (Steindachner, 1875)	Timburé	U		1,2	autochthonous/ native
Anostomidae	*Leporinus* cf. *steindachneri* (Eigenmann, 1907)	Piau		P4/P5/P6	3	invasive/ Jequitinhonha river basin/Unknown
Anostomidae	*Leporinus conirostris* (Steindachner, 1875)	Piau Branco	U		1	autochthonous/ native
Anostomidae	*Leporinus copelandii* (Steindachner, 1875)	Piau Vermelho	U/M/L		1,2	autochthonous/ native
Anostomidae	*Schizodon* sp.	Campineiro	U		1	autochthonous/ native
Bryconidae	*Salminus brasiliensis* (Cuvier, 1816)	Dourado	U		1,2	invasive/São Francisco river basin/Unknown
Bryconidae	*Brycon insignis* (Steindachner, 1877) AM	Pirapitinga	U/M		1,2	autochthonous/native
Bryconidae	*Brycon cephalus* (Günther, 1869)	Matrinxã			1	invasive/Amazon river basin/Fish farming
Characidae	*Astyanax bimaculatus* (Linnaeus, 1758)	Tambiú		P1/P2/P3/P4/P 5/P6	3	autochthonous/native
Characidae	*Astyanax fasciatus* (Cuvier, 1819)	Lambari do Rabo Vermelho	U		1,2	autochthonous/native
Characidae	*Astyanax giton* (Eigenmann, 1908)	Lambari	U/M/L		2	autochthonous/native
Characidae	*Astyanax intermedius* Eigenmann, 1908	Lambari	U		1,2	autochthonous/native
Characidae	*Astyanax janeiroensis* Eigenmann, 1908	Lambari	U/M/L		2	autochthonous/native
Characidae	*Astyanax lacustris* (Lütken, 1875)	Lambari	U/M/L		2	autochthonous/native
Characidae	*Astyanax microschemos* Bertaco & Lucena, 2006	Lambari	U/M		2	autochthonous/native
Characidae	*Astyanax parahybae* Eigenmann, 1908	Lambari	U/M/L		2	autochthonous/native
Characidae	*Astyanax scabripinnis* (Jenys, 1842)	Lambari Prata	U/M	P1/P2/P3/P4P/ P5/P6	1,2,3	autochthonous/native
Characidae	*Astyanax* sp.	Lambari	U	P1/P2/P3/P4/P 5/P6	1,2,3	autochthonous/native
Characidae	*Astyanax taeniatus* (Jenyns, 1842)	Lambari		P1/P2/P3/P4/P 5/P6	3	autochthonous/native
Characidae	*Bryconamericus ornaticeps* Bizerril & Perez-Neto, 1995	Lambarizinho	U		2	autochthonous/native
Characidae	*Bryconamericus tenuis* Bizerril & Auraujo, 1992	Lambarizinho	U/L		2	autochthonous/native
Characidae	*Deuterodon parahybae* Eigenmann & Eigenmann 1908	Lambari	U/M/L		2	autochthonous/native
Characidae	*Hemigramus* sp.	Lambari	U		1	autochthonous/native
Characidae	*Hyphessobrycon bifasciatus* Ellis, 1911		U/M/L		2	autochthonous/native
Characidae	*Knodus moenkhausii* (Eigenmann & Kennedy, 1903)	Lambari	U/L		2	autochthonous/native
Characidae	*Oligosarcus acutirostris* Menezes, 1987	Bocarra	U/M/L	P4/P5/P6	1,2,3	autochthonous/native
Characidae	*Oligosarcus hepsetus* (Cuvier, 1829)	Bocarra	U		1	autochthonous/native
Characidae	*Oligosarcus robustus* Menezes, 1969	Bocarra			2	autochthonous/native
Characidae	*Piabina argentea* Reinhardt, 1867	Piquira	U		2	autochthonous/native

Cont.

Family	Species	Common names	Itapemirim River Basin	Fruteiras river (sampling station)	Reference	Origin/Occurrence
Characidae	*Probolodus heterostomus* Eigenmann, 1911	Lambari	U/M/L		2	autochthonous/native
Crenuchidae	*Characidium alipioi* Travassos, 1955	Charutinho	U		2	autochthonous/native
Crenuchidae	*Characidium* sp.	Charutinho	U/M/L		1,2	autochthonous/native
Crenuchidae	*Characidium* cf. *timbuiensis* Travassos, 1946	Charutinho		P4/P5/P6	3	autochthonous/native
Curimatidae	*Chypocharax* sp.	Branquinha	U		2	autochthonous/native
Curimatidae	*Cyphocharax gilbert* (Quoy & Gaimard, 1824)	Branquinha	U/M/L	P5	1,2	autochthonous/native
Curimatidae	*Steindachnerina gracilis* Vari &Williams Vari,1989	Branquinha	U		2	autochthonous/native
Erythrinidae	*Hoplias lacerdae* aff. *intermedius* Miranda Ribeiro, 1908	Trairão	U		2	autochthonous/native
Erythrinidae	*Hoplias malabaricus* (Bloch, 1794)	Traíra	U/M/L	P4/P5/P6	1,2,3	autochthonous/native
Prochilodontidae	*Prochilodus* sp.	Curimba	U		1	autochthonous/native
Prochilodontidae	*Prochilodus vimboides* Kner,1859AM	Curimba	U/L		1,2	autochthonous/native
Serrasalmidae	*Colossoma macropomum* (Cuvier, 1816)	Tambaqui	U		1,2	invasive/Amazon river basin/Fish farming
Serrasalmidae	*Piaractus mesopotamicus* (Holmberg, 1887)	Caranha	U		1,2	invasive/Paraguai river basin/Fish farming
Clupeidae	*Brevoortia pectinata* (Jenyns, 1842)	Savelha	L		2	autochthonous/native
Engraulidae	*Anchovia clupeoides* (Swainson, 1839)	Majuba	L		2	autochthonous/native
Poeciliidae	*Phalloceros harpagos* Lucinda, 2008	Barrigudinho	U/M/L		2	autochthonous/native
Poeciliidae	*Poecilia reticulata* Peters, 1859	Guppy	U/M/L	P1/P2/P3/P4/P 5	1,2,3	invasive/Amazon river basin/Fishkeeping
Poeciliidae	*Poecilia vivipara* Bloch & Schneider, 1801	Barrigudinho	U/M/L		1,2	invasive/Amazon river basin/Fishkeeping
Syngnatidae	*Microphis brachyurus* (Blecher, 1853)	Caximbo	L		2	autochthonous/native
Gymnotidae	*Gymnotus carapo* Linnaeus,1758	Sarapó	U/M/L		1,2	autochthonous/native
Gymnotidae	*Gymnotus sylvius* Albert & Fernandes-Matioli, 1999	Sarapó	L		2	autochthonous/native
Sternopygidae	*Eigenmannia* sp.	Luzia	U/L		2	autochthonous/native
Sternopygidae	*Eigenmannia virescens* (Valenciennes, 1836)	Luzia	U		1	autochthonous/native
Mugilidae	*Mugil curema* Valenciennes, 1836	Tainha	U		1	autochthonous/native
Carangidae	*Caranx latus* Agassiz, 1831	Garajuba	L		2	autochthonous/native
Centropomidae	*Centropomus parallelus* Poey,1860	Robalo Branco	U		2	autochthonous/native
Centropomidae	*Centropomus undecimalis* (Bloch, 1792)	Robalo Flexa	M		1,2	autochthonous/native
Cichlidae	*Australoheros muriae* Ottoni & Costa, 2008	Acará	M/L		2	autochthonous/native
Cichlidae	*Crenicichla lacustris* (Castelnau, 1855)	Jacundá	U/M/L	P4	1,2,3	autochthonous/native
Cichlidae	*Geophagus brasiliensis* (Quoy & Gaimard, 1824)	Acará	U/M/L	P1/P2/P3/P4/P 5/P6	1,2,3	autochthonous/native
Cichlidae	*Oreochromis niloticus* (Linnaeus, 1758)	Tilápia do Nilo	U		1	exotic/African continent/Fish farming
Cichlidae	*Coptodon rendalli* (Boulenger, 1897)	Tilápia	U/M/L		1,2	exotic/African continent/Fish farming
Eleotridae	*Eleotris pisonis* (Gmelin, 1789)	Amoré	L/M		2	autochthonous/native
Gerreidae	*Diapterus rhombeus* (Bloch & Schneider, 1801)	Carapeba	L		2	autochthonous/native
Gerreidae	*Eucinostomus lefroyi* (Goode, 1874)	Carapicu	U/M		2	autochthonous/native
Gerreidae	*Eucinostomus melanopterus* (Bleeker, 1863)	Carapicu	L		2	autochthonous/native
Gerreidae	*Eugerres brasilienus* (Cuvier, 1830)	Carapicu	L		2	autochthonous/native
Gerreidae	*Ulaema lefroyi* (Goode, 1874)	Carapicu	L		2	autochthonous/native
Gobiidae	*Awaous tajasica* (Lichtenstein, 1822)	Peixe Sapo	U/M/L	P4	1,2	autochthonous/native
Gobiidae	*Bathygobius soporator* (Valenciennes, 1837)	Amoré	L		2	autochthonous/native
Gobiidae	*Ctenogobius boleosoma* (Jordan and Gilbert, 1882	Amoré	L		2	autochthonous/native
Gobiidae	*Dormitator maculatus* (Bloch, 1792)	Amoré	L		2	autochthonous/native
Gobiidae	*Gobionellus stomatus* Starks, 1913	Maria da Toca	U/L		2	autochthonous/native
Lutjanidae	*Lutjanus jocu* (Cuvier, 1829)	Dentão	L		2	autochthonous/native
Sciaenidae	*Pachyurus* sp.	Corvina	U		1	autochthonous/native
Sparidae	*Archosargus probatocephalus* (Walbaum, 1792)	Sargo de dentes	L		2	autochthonous/native

Cont.

Family	Species	Common names	Itapemirim River Basin	Fruteiras river (sampling station)	Reference	Origin/Occurrence
Achiridae	*Achirus declivis* Chabanaud, 1940	Linguado	L		2	autochthonous/native
Paralichthyidae	*Citharichthys arenaceus* Evermann & Marsh, 1900	Linguado-Onça	L		2	autochthonous/native
Ariidae	*Genidens genidens* (Cuvier, 1829)	Caçari	U/L		2	autochthonous/native
Auchenipteridae	*Glanidium melanopterum* Miranda Ribeiro,1918	Cumbaca	M		2	autochthonous/native
Auchenipteridae	*Pseudauchenipterus affinis* (Steindachner, 1877)	Testa de Ferro	U		1	autochthonous/native
Auchenipteridae	*Trachelyopterus striatulus* (Steindachner, 1877)	Cumbaca	M		2	autochthonous/native
Callichthyidae	*Aspidoras virgulatus* Nijssen & Isbrücker, 1980	Coridora	U/M		2	autochthonous/native
Callichthyidae	*Callichthys callichthys* (Linnaeus, 1758)	Tamboatá	U		1,2	autochthonous/native
Callichthyidae	*Hoplosternum littorale* (Hancock, 1828)	Tamboatá	U/M/L		1,2	invasive/Paraguai river basin/Sport fishing
Callichthyidae	*Scleromystax prionotos* (Nijssen & Isbrüecker, 1980	Coridora	U/M		2	autochthonous/native
Clariidae	*Clarias gariepinus* (Burchell, 1822)	Bagre Africano	U	P2	1,2,3	exotic/African continent/Fish farming
Heptapteridae	*Imparfinis* sp.	Bagrinho	U/M/L		2	autochthonous/native
Heptapteridae	*Pimelodella* cf. *hartii* (Steindachner, 1877)	Mandí		P2/P4/P6	3	autochthonous/native
Heptapteridae	*Pimelodella lateristriga* (Lichtenstein, 1823)	Mandí	U		2	autochthonous/native
Heptapteridae	*Pimelodella pectinifer* Eigenmann & Eigenmann, 1888	Mandí	U/M/L		1,2	autochthonous/native
Heptapteridae	*Rhamdia quelen* (Quoy & Gaimard, 1824)	Bagre Comum	U/M/L	P1/P2/P3/P4/P5/P6	1,2,3	autochthonous/native
Heptapteridae	*Rhamdia* sp.	Bagre	U/M/L		2	autochthonous/native
Ictaluridae	*Ictalurus punctatus* (Rafinesque, 1818)	Bagre Americano	U	P1	3	North American continent
Loricariidae	*Delturus* cf. *carinotus* (La Monte, 1933)	Cascudo Laje		P1/P4/P5/P6	3	autochthonous/native
Loricariidae	*Delturus parahybae* Eigenmann & Eigenmann	Cascudo Laje	U		1,2	autochthonous/native
Loricariidae	*Delturus* sp.	Cascudo Laje	U		2	autochthonous/native
Loricariidae	*Harttia* cf. *carvalhoi* Miranda Ribeiro, 1939	Cascudo Barata		P4	3	autochthonous/native
Loricariidae	*Harttia loricariformis* Steindachner, 1877	Cascudo Barata	U/M/L		1,2	autochthonous/native
Loricariidae	*Hisonotus notatus* Eigenmann & Eigenmann, 1889	Cascudinho	U/M/L		1,2	autochthonous/native
Loricariidae	*Hypostomus* aff. *commersoni* Valenciennes, 1836	Cascudo		P1/P2/P3/P4/P5	3	autochthonous/native
Loricariidae	*Hypostomus affinis* (Steindachner, 1877)	Cascudo Cari	U/M/L	P2/P4;P5	1,2,3	autochthonous/native
Loricariidae	*Hypostomus auroguttatus* Kner, 1854	Cascudo	U/M		1,2	autochthonous/native
Loricariidae	*Hypostomus* sp.	Cascudo	U		1	autochthonous/native
Loricariidae	*Liposarcus pardalis* (Castelnau, 1855)	Cascudo	L		2	autochthonous/native
Loricariidae	*Loricariichthys castaneus* (Castelnau, 1855)	Cascudo Viola	U	P1/P2/P3/P4/P5	1.2.3	autochthonous/native
Loricariidae	*Neoplecostomus microps* (Steindachner, 1877)	Cascudinho	U/M		2	autochthonous/native
Loricariidae	*Otothyris lophophanes* (Eigenmann & Eigenmann, 1889)	Cascudinho	U/L		2	autochthonous/native
Loricariidae	*Pareiorhaphis garbei* (Ihering, 1911)	Cascudinho	U		2	autochthonous/native
Loricariidae	*Parotocinclus maculicauda* (Steindachner, 1877)	Cascudinho	U/M/L	P1/P3/P4/P5/P6	1,3	autochthonous/native
Loricariidae	*Parotocinclus* sp.	Cascudinho	M	P4/P5/P6	1,3	autochthonous/native
Loricariidae	*Rhineloricara* sp.	Cascudo Viola		P1/P2/P3/P4	3	autochthonous/native
Loricariidae	*Rineloricaria steindachneri* (Regan, 1904)	Cascudo Viola	U/M/L		2	autochthonous/native
Pimelodidae	*Pimelodus maculatus* Lacepède, 1803	Mandí Amarelo	U		1	autochthonous/native
Pseudopimelodidae	*Microglanis parahybae* (Steindachner, 1880)	Bagre Sapo	U/M/L		2	autochthonous/native
Trichomycteridae	*Ituglanis parahybae* (Eigenmann, 1918)	Bagrinho	L		2	autochthonous/native
Trichomycteridae	*Trichogenes claviger* Pinna, Helmer, Britski & Nunes, 2010	Cambeva	M		2	autochthonous/native
Trichomycteridae	*Trichomycterus alternatus* (Eigenmann, 1917)	Cambeva	U		1	autochthonous/native
Trichomycteridae	*Trichomycterus brunoi* Barbosa & Costa, 2010	Cambeva	U/M/L		1,2	autochthonous/native
Trichomycteridae	*Trichomycterus caudofasciatus* Alencar & Costa, 2004	Cambeva	U/L		1,2	autochthonous/native
Synbranchidae	*Synbranchuns marmoratus* Bloch, 1795	Mussum	L		2	autochthonous/native

In the areas of influence of the sampling stations Fruteiras Small Hydroelectric Power Plant located downstream (22 species in P4, 18 species in P5 and 14 species in P6) of the dam with highest number of species captured in connection stations upstream (13 species in P1, 13 species in P2 and 11 species in P3) (Table 2). The fish fauna of small hydroelectric central Fruteiras has prevalence of small to medium-size generalist species. This situation is common in areas with dams where the dammed environment favors species that are sedentary and more tolerant to environmental variations, i.e. they can complete the entire life cycle within the reservoir area. An example is the species of the family Cichlidae, some Characidae and Heptapteridae species (AGOSTINHO et al., 2007).

The findings show a simplification of the fish fauna in the region of Fruteiras Small Hydroelectric Power Plant. In the areas of the hydroelectric power plant, the synergy of different impacts on the natural environment has direct consequences to the composition of local fish populations, resulting in a large fluctuation in the abundance of certain species and a gradual loss of diversity in the early years (BENEDITOCECILIO et al., 1997; AGOSTINHO et al., 1999; MAZZONI; PETITO, 2012).

Overall, the Itapemirim river basin has record of species that are important from the ecological, economic and hunting perspectives. The Fruteiras river has some of these species, e.g. some species of the family Anostomidae that are rheophilic and migratory species. This shows that the Fruteiras river can be an important migratory route for some species from the Itapemirim river. Some species that are indicative of environmental quality are also worth of notice: Chrenuciedae and some Characidae, in addition to species of hunting and economic importance, such as Mexican tetras (*Astyanax* sp.), piaus (*Leporinus* sp.) and the trahiras (*Hoplias* sp.).

One of the main current threats to native ichthyofauna is the existence of introduced species (AGOSTINHO et al., 2005; VITULE et al., 2012). In the Itapemirim river basin, there are introduced species as well; 12 out of the described species had been introduced (9.83%). In areas of dams for electricity generation, species are commonly introduced to improve the local fishing system (AGOSTINHO et al., 2007). In the areas of influence of small hydroelectric central Fruteiras, exotic and invasive species account for 16% of the fish fauna inventoried. When compared with other stretches of the Itapemirim river basin, the number of species found is similar to the one registered for other stretches of the basin (13% for the Upper Itapemirim, 17% for the Middle Itapemirim, 6% for the Lower Itapemirim). Among the species collected species stood out allochthonous Poecillia reticulata, from the Amazon basin. They are usually introduced by fishkeeping practices. This species is small, generalist and indicative of degraded environments and under depletion (FERREIRA; CASATTI 2006; CUNICO et al., 2009; SOUZA; TOZZO, 2013). Exotic species Clarias gariepinus and Ictalurus punctatus originating from African and North American continents, respectively, were also captured. These species are larges, omnivorous, preferably carnivorous, with physiological properties that allow the use of Neotropical freshwater environments, disrupting local communities (ALVES et al., 1999). Importantly, it is the first record of *Ictalurus punctatus* for the basin.

The lack of consolidated scientific data for the Itapemirim river basin, added to new records of species as, *Hypostomus commersoni, Leporinus steindachneri and Ictalurus punctatus,* not captured in previous studies, shows the importance of this study for fostering knowledge of the fish fauna of the Fruteiras river and reinforces the need for conservation programs for the Itapemirim river, in order to maintain the diversity of the three regions of the Itapemirim river basin.

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